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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MATTIS, JASON E	
ART UNIT	**PAPER NUMBER**
2665	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/824,701	WILLIAMS, ROBERT ALAN	
	Examiner	Art Unit	
	Jason E. Mattis	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the amendment filed on 6/30/05. Claims 1-20 are currently pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampath et al. (U.S. Publication US 2002/0009081 A1) in view of "*SmartSwitch 2000 Firmware version 4.05.06*" and in further view of Runaldue et al. (U.S. Pat. 6128654).

With respect to claim 1, Sampath et al. discloses a network device configured to control communication of data frames between stations **(See page 3 paragraph 61 and Figure 1 of Sampath et al. for reference to switch-on-chip (SOC) 10, which is a network device controlling communication of data frames between stations)**. Sampath et al. also discloses a plurality of receive ports configured to receive data frames from the stations **(See page 3 paragraph 62 and Figure 1 of Sampath et al. for reference to ports 31)**. Sampath et al. further discloses a buffer configured to

buffer the received data frames **(See page 5 paragraph 94 and Figure 2 of Sampath et al. for reference to an Input FIFO, which is a buffer receiving packets)**. Sampath et al. further discloses a memory configured to store address information and data forwarding information associated with the received data frames **(See Figure 1 of Sampath et al. for reference to ARL table 31, which is a memory storing address and data forwarding information)**. Sampath et al. does not specifically disclose processing and forwarding frames to destination addresses without modifying the frames when operating in accordance with a first protocol and processing and forwarding frames to destination addresses with at least one of the frames being modified before being forwarded when operating in accordance with a second protocol. Sampath et al. also does not specifically disclose a register configured to store information indicating whether the network device is operating in accordance with a first protocol. Sampath et al. further does not disclose queuing logic configured to obtain a frame pointer identifying a location in an external memory for each received frame and configured to transfer each received frame to the external memory for storage in a location identified by the respective frame pointer.

With respect to claim 8, Sampath et al. discloses a method in a network device that controls communication of data frames between stations **(See page 3 paragraph 61 and Figure 1 of Sampath et al. for reference to switch-on-chip (SOC) 10, which is a network device controlling communication of data frames between stations)**. Sampath et al. also discloses storing information including address information and data forwarding information in a memory of a network device **(See Figure 1 of Sampath et**

al. for reference to ARL table 31, which is a memory storing address and data forwarding information). Sampath et al. further discloses receiving data frames on a plurality of receive ports of the network device **(See page 3 paragraph 62 and Figure 1 of Sampath et al. for reference to ports 31, which data frames are received on)**. Sampath et al. does not specifically disclose setting an operating mode to at least one of a first operating mode and a second operating mode. Sampath et al. also does not specifically disclose processing and forwarding frames to destination addresses without modifying the frames when operating in accordance with a first protocol and processing and forwarding frames to destination addresses with at least one of the frames being modified before being forwarded when operating in accordance with a second protocol. Sampath et al. further does not disclose queuing logic configured to obtain a frame pointer identifying a location in an external memory for each received frame and configured to transfer each received frame to the external memory for storage in a location identified by the respective frame pointer.

With respect to claims 2 and 9, Sampath et al. does not specifically disclose that the first protocol is IEEE 802.1D and the second protocol is IEEE 802.1Q.

With respect to claims 1-2 and 8-9, the *SmartSwitch* paper, in the field of communications, disclose a switch that is programmable to operate in accordance with a first protocol, 802.1D, or in accordance with a second protocol, 802.1Q **(See page 3 paragraph 2 of the *SmartSwitch* paper for reference to selecting the operational mode as either 802.1D or 802.1Q)**. Since, as disclosed in the Applicant's own Background Art section, when operating in accordance with 802.1D data frames must

be forwarded exactly the way they were received, and when operating in accordance with 802.1Q, it is sometimes necessary to modify data frames before forwarding, the switch disclosed in the *SmartSwitch* paper must also follow these rules. Since, the switch disclosed in the *SmartSwitch* paper can operate in either 802.1D protocol or 802.1Q, it must contain a register storing information indicating the current operating mode of the switch that is used to determine whether it is operating in accordance with 802.1D protocol or in accordance with 802.1Q protocol. Using a switch that is programmable to operate in either a first 802.1D protocol or a second 802.1Q protocol has the advantage of creating more flexibility by being able to use the switch in multiple network environments, specifically either a network using the 802.1D protocol or a network using the 802.1Q.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of the *SmartSwitch* paper, to combine using a switch that is programmable to operate in either a first 802.1D protocol or a second 802.1Q protocol, as suggested by the *SmartSwitch* paper, with the network device and method of Sampath et al., with the motivation being to create more flexibility by being able to use the switch in multiple network environments, specifically either a network using the 802.1D protocol or a network using the 802.1Q.

With respect to claims 1-2 and 8-9, Runaldue et al., in the field of communications, discloses queuing logic configured to obtain a frame pointer identifying a location in an external memory for each received frame and configured to transfer each received frame to the external memory for storage in a location identified by the

respective frame pointer **(See column 11 lines 51-57 and Figure 1 of Runaldue et al. for reference to obtaining and address pointer, which is a frame pointer, that identifies a location in an external memory 36 in which a corresponding frame is stored)**. Using queuing logic configured to obtain a frame pointer identifying a location in an external memory for each received frame and configured to transfer each received frame to the external memory for storage in a location identified by the respective frame pointer has the advantage of keeping the internal memory of the device small by only requiring pointer data to be stored while allowing a large amount of flexibility in the design/size of the external memory.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Runaldue et al., to combine using queuing logic configured to obtain a frame pointer identifying a location in an external memory for each received frame and configured to transfer each received frame to the external memory for storage in a location identified by the respective frame pointer, as suggested by Runaldue et al., with the system and method of Sampath et al. and the *SmartSwitch* paper, with the motivation being to keep the internal memory of the device small by only requiring pointer data to be stored while allowing a large amount of flexibility in the design/size of the external memory.

With respect to claims 3 and 10, Sampath et al. does not specifically disclose a register configured to store information indicating whether the network device is operating in accordance with a first protocol, reading the contents of the register, and

determining whether the network device is operating in accordance with the first IEEE 802.1D protocol of the second IEEE 802.1Q protocol.

With respect to claims 3 and 10, the *SmartSwitch* paper, in the field of communications, disclose a switch that is programmable to operate in accordance with a first protocol, 802.1D, or in accordance with a second protocol, 802.1Q **(See page 3 paragraph 2 of the *SmartSwitch* paper for reference to selecting the operational mode as either 802.1D or 802.1Q)**. Since, the switch disclosed in the *SmartSwitch* paper can operate in either 802.1D protocol or 802.1Q, it must contain a register storing information indicating the current operating mode of the switch that is used to determine whether it is operating in accordance with 802.1D protocol or in accordance with 802.1Q protocol. Using a switch that is programmable to operate in either a first 802.1D protocol or a second 802.1Q protocol has the advantage of creating more flexibility by being able to use the switch in multiple network environments, specifically either a network using the 802.1D protocol or a network using the 802.1Q.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of the *SmartSwitch* paper, to combine using a switch that is programmable to operate in either a first 802.1D protocol or a second 802.1Q protocol, as suggested by the *SmartSwitch* paper, with the network device and method of Sampath et al., with the motivation being to create more flexibility by being able to use the switch in multiple network environments, specifically either a network using the 802.1D protocol or a network using the 802.1Q.

With respect to claims 4-5 and 11-12, Sampath et al. discloses retrieving a data frame received on one of the receive ports and transmitting the received data frame to the first transmit port **(See page 5 paragraphs 94-97 of Sampath et al. for reference to determining the egress ports of a received packet and transmitting the packet to the egress ports)**. Sampath et al. does not specifically disclose that when operating in accordance with the first protocol, forwarding the data frame to the port identified by forwarding information without at least one of inserting virtual local area network information into the frame, deleting VLAN information included with the frame, and modifying VLAN information included with the frame. Sampath et al. also does not specifically disclose that when operating in accordance with the second protocol, doing at least one of inserting VLAN information into the received data frame, deleting VLAN information included with the received data frame, and modifying the VLAN information included with the received data frame based on whether the first transmit port is a member of an untagged set for the first VLAN.

With respect to claims 4-5, 11-12, and 17-18, the *SmartSwitch* paper, in the field of communications, disclose a switch that is programmable to operate in accordance with a first protocol, 802.1D, or in accordance with a second protocol, 802.1Q **(See page 3 paragraph 2 of the *SmartSwitch* paper for reference to selecting the operational mode as either 802.1D or 802.1Q)**. Since, as disclosed in the Applicant's own Background Art section, when operating in accordance with 802.1D data frames must be forwarded exactly the way they were received, and when operating in accordance with 802.1Q, it is sometimes necessary to modify data frames, by

inserting, deleting, or modifying VLAN information included in a frame before forwarding, the switch disclosed in the *SmartSwitch* paper must also follow these rules. Using a switch that is programmable to operate in either a first 802.1D protocol or a second 802.1Q protocol has the advantage of creating more flexibility by being able to use the switch in multiple network environments, specifically either a network using the 802.1D protocol or a network using the 802.1Q.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of the *SmartSwitch* paper, to combine using a switch that is programmable to operate in either a first 802.1D protocol or a second 802.1Q protocol, as suggested by the *SmartSwitch* paper, with the network device and method of Sampath et al., with the motivation being to create more flexibility by being able to use the switch in multiple network environments, specifically either a network using the 802.1D protocol or a network using the 802.1Q.

With respect to claims 6 and 13, Sampath et al. discloses identifying forwarding information for a first one of the received data frames **(See page 5 paragraph 94 and page 7 paragraphs 126-139 of Sampath et al. for reference to an ARL Engine and a Fast Filtering Process (FFP), searching an ARL table to identify data forwarding information)**. Sampath et al. also discloses generating a forwarding descriptor for the first data frame including an untagged set field identifying at least one transmit port, and a first opcode field including information identifying whether the first data frame was at least one of untagged, VLAN-tagged, and priority-tagged **(See page 5 paragraph 95 and page 7 paragraphs 126-139 of Sampath et al. for reference to**

the ARL engine outputting a result the ARL search and the FFP output, which together are a forwarding descriptor, including the egress port/ports, which is/are transmit ports, and also including information about whether the frame was untagged, VLAN-tagged, or priority tagged).

With respect to claims 7 and 14, Sampath et al. does not specifically disclose deleting a VLAN tag in the first data frame based on the contents of the untagged set field and the opcode field and whether the device is operating in accordance with the second protocol.

With respect to claims 7 and 14, the *SmartSwitch* paper, in the field of communications, disclose a switch that is programmable to operate in accordance with a first protocol, 802.1D, or in accordance with a second protocol, 802.1Q **(See page 3 paragraph 2 of the *SmartSwitch* paper for reference to selecting the operational mode as either 802.1D or 802.1Q)**. Since, as disclosed in the Applicant's own Background Art section, when operating in accordance with 802.1Q, it is sometimes necessary to delete a VLAN tag included in a frame before forwarding, the switch disclosed in the *SmartSwitch* paper must also follow these rules. Using a switch that is programmable to operate in either a first 802.1D protocol or a second 802.1Q protocol has the advantage of creating more flexibility by being able to use the switch in multiple network environments, specifically either a network using the 802.1D protocol or a network using the 802.1Q.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of the *SmartSwitch* paper, to combine using a

switch that is programmable to operate in either a first 802.1D protocol or a second 802.1Q protocol, as suggested by the *SmartSwitch* paper, with the network device and method of Sampath et al., with the motivation being to create more flexibility by being able to use the switch in multiple network environments, specifically either a network using the 802.1D protocol or a network using the 802.1Q.

Allowable Subject Matter

2. Claims 15-20 are allowed.

Response to Arguments

3. Applicant's arguments filed 6/30/05 have been fully considered but they are not persuasive.

Regarding Applicant's argument that:

> "The motivation for combining Sampath and SmartSwitch is merely a conclusory statement regarding an alleged benefit of the combination. No portion of either reference is pointed to as providing objective motivation for combining Sampath and SmartSwitch." (See page 12 of Applicant's Remarks section)

the Examiner respectfully disagrees. The motivation to combine does not have to be explicitly found in the references themselves. The motivation may be implicitly implied in the references or may be found in the knowledge of one of ordinary skill in the art

(See Section 2144 of the MPEP). In the current case the advantage of creating a more flexible device by allowing the device to by used in network environments using either 802.1D or 802.1Q is an advantage that is implicitly gained by the device disclosed in the *SmartSwitch* paper. Therefor, the motivation to combine does satisfy the requirements of 35 U.S.C. § 103.

Regarding Applicant's argument in reference to claims 6 and 13 that:

> "None of these portions of Sampath discloses or suggests generating a forwarding descriptor that includes an untagged set field identifying at least one transmit port and an opcode field including information identifying whether the first data frame was at least one of untagged, VLAN-tagged or priority tagged, as required by claim 6 [and claim 13]." (See page 13 of Applicant's Remarks section)

the Examiner respectfully disagrees. As shown in the rejections above, Sampath discloses returning a result of an ARL search that includes the egress port/ports, an untagged port bitmap, and a packet containing a Tag Header (See page 5 paragraph 95 of Sampath et al.). Sampath et al. also discloses a VID, which is an opcode including information identifying how the frame was tagged (See page 7 paragraph 127 of Sampath et al.). Together this information corresponds to the claimed forwarding descriptor including the untagged port bitmap, which is the untagged set field, and the VID, which is the claimed opcode.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason E. Mattis whose telephone number is (571) 272-3154. The examiner can normally be reached on M-F 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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